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ABSTRACT

A study of the effects of modality preferences and teacher competencies on reading achievement was undertaken using three different programs for initial reading instruction. The major purposes of the study were to determine differences in reading achievement when first grade children are placed in programs congruent or noncongruent with their sensory modality preferences, to explore the effects of teacher competence on differences in achievement when pupils have congruent or noncongruent placement, to validate modality preference assessments, and to modify the kindergarten assessment battery. Subjects were 107 first grade pupils from a multi-ethnic, multilingual, multicultural, economically disadvantaged Hawaiian community. Data were obtained from kindergarten assessment of readiness and first grade criterion measures of reading achievement, and learners were identified according to auditory, visual, and no modality preference. Results indicated that pupils whose modality preferences were congruent with the primary instructional focus of initial reading programs achieved significantly higher scores on all measures of initial reading behavior than did pupils whose modality preferences were not congruent with the instructional focus. Also, experimental placement was more effective with teachers of greater competency, and the clinical modality decision procedures were validated statistically. (Implications for educational practice are included.) (DF)

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DOES MODALITY PREFERENCE MAKE A DIFFERENCE? THE RESULTS OF A THREE-YEAR STUDY--EMPIRICAL DATA

Meeting: Reading Strategies that Make a Difference
Thursday, Ma y 4, 1978 3:45-4:45 P.M.
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CS004 236

DOES MODALITY PREFERENCE MAKE A DIFFERENCE?
THE RESULTS OF A THREE-YEAR STUDY--EMPIRICAL DATA

Introduction

The empirical data presented in this paper are directed into two parts: (1) experimental study (1976-1977); and (2) pilot study (1974-1976). The primary focus is the experimental study which is presented first.

This investigation examined the effects of modality preferences and teacher competencies on reading achievement outcomes when three different programs were utilized for initial reading instruction with 107 first-grade pupils. The major purposes of this investigation were: (1) to determine differences in reading achievement outcomes when first-grade children were placed in reading programs which were congruent or non-congruent with their sensory modality preferences; (2) to explore the effects of teacher competence on differences in reading achievement when first-grade pupils had congruent or non-congruent placement in instructional programs; (3) to test the validity of clinical decision procedures to classify pupils' modality preferences; and (4) to modify the kindergarten assessment battery through statistical procedures. This paper presents a summary of the study and a discussion of its results. Conclusions and educational implications are given.

The sample of this study consisted of 107 first-grade pupils; fifty girls and fifty-seven boys who attended a public elementary school in Hawaii during the 1976-1977 academic year. These pupils came from

a multi-ethnic, multi-lingual, and multi-cultural community which is economically disadvantaged. The major ethnic backgrounds represented in the community are Filipino, Samoan, part-Hawaiian, Oriental, and Caucasian. School records indicated that approximately 50 percent of the school population received public assistance or some type of government subsidy.

Summary of Methods and Procedures

Two distinct phases of data collection were undertaken: kindergarten assessment of readiness and first-grade criterion measures of reading achievement. In May of 1976, kindergarten pupils were evaluated on a diagnostic battery which included the Peabody Picture Vocabulary Test; Goodenough Draw-a-Man Test; Developmental Test of Motor-Integration; Wepman Auditory Discrimination Test; selected subtests of the Illinois Test of Psycholinguistic Abilities: Auditory Sequential Memory and Visual Sequential Memory; Keystone Visual Survey Tests; Informal Inventory of Letters and Numbers and Gates MacGinitie Readiness Skills Test (GMRT). All tests except the GMRT were administered in a one-to-one setting by the investigator and graduate students in reading from the University of Hawaii. The GMRT was administered by the same examiners in a small group setting with five children in each group. All tests were administered in a quiet, well-lighted room and administration and scoring procedures recommended by the manuals were followed carefully. Test data were then placed on a profile chart showing each learner's strengths and weaknesses. These data were used in determining each pupil's sensory modality preference. Three types of

learners were identified: auditory preferred, visual preferred, and learners with no sensory modality preferences.

An auditory preferred learner is a pupil whose scaled score on the Auditory Sequential Memory subtest (ASM) of the Illinois Test of Psycholinguistic Abilities (ITPA) is nine or more points higher than his or her scaled score on the Visual Sequential Memory subtest (VSM) of the ITPA and/or one whose average stanine score on the four auditory tests of the Gates MacGinitie Readiness Tests (GMRT) is two stanines higher than the average stanine score on the four visual tests of the GMRT.

A visual preferred learner is one whose scaled score on the VSM test of the ITPA is nine or more points higher than his or her scaled score on the ASM test of the ITPA and/or one whose average stanine score on the four visual tests of the GMRT is two stanines or more higher than the average score on the four auditory tests of the GMRT.

A learner with no sensory modality preference is one whose scaled scores on the VSM and ASM tests from the ITPA differ by less than nine points and/or one whose average stanine scores on the auditory and visual tests of the GMRT differ by one or zero stanines.

The three programs used for initial reading instruction were Structural Reading Program, Hawaii English Program, and Reading 360. The Structural Reading Program is an analytic phonics program which emphasizes sound/symbol associations. It was identified primarily as an auditory program because of the strong phonic emphasis in its initial stages. The Hawaii English Program is an individualized, multimedia, self-instructional or peer-taught program with three basic

strands: language skills, language systems, and literature. Direct teaching of sound/symbol association or phonic analysis cues are not part of the instructional program. The pupil is dependent on visual cues and visual memory for success in this program. The Hawaii English Program was identified primarily as a visual program in this study. Reading 360 is a basal program which emphasizes word recognition and comprehension. The word recognition program is eclectic. It includes phonics analysis, structural analysis, context clues, configuration, linguistic patterning and dictionary skills. Reading 360 was identified as an eclectic basal program which teaches through both visual and auditory modes.

This study used a randomized block design in which modality preference was the assigned factor and instructional program was the manipulated treatment factor. The kindergarten assessment identified nineteen auditory preferred learners, thirty-six visual preferred learners, and fifty-two learners with no sensory modality preference. Pupils were assigned randomly to experimental or control groups. Pupils in the experimental group had an instructional program which was congruent with their modality preference while pupils in the control group had an instructional program which was not congruent with their modality preference. The experimental group numbered fifty-two pupils; the control group had fifty-five.

At the end of first grade in May of 1977, the reading achievement of all pupils was determined by two instruments: the Woodcock Reading Mastery Test and the Gates MacGinitie Reading Test, Primary A. Two moderating variables were evaluated at this time: pupil attitude toward

reading and teacher competence.

An Informal Reading Attitude Survey designed by the investigator assessed pupil attitude toward different types of reading activities such as word analysis skills, literature, independent reading, language experience stories and library usage.

This research was conducted in a public elementary school with four first-grade classrooms, two of which were self-contained. The others were kindergarten-first grade combinations. The two combination classes used the Hawaii English Program. One self-contained class used Structural Reading, and the other used Reading 360. Teacher competence ratings were obtained by the investigator who assessed the overall learning environment in each classroom. One combination classroom using the Hawaii English Program was identified as superior. Two classrooms, one combination class using the Hawaii English Program and one self-contained classroom with Reading 360, were rated as average. One self-contained classroom which used Structural Reading was identified as poor.

Several different types of statistical analyses were made. Summary statistics and correlational matrixes were reported for all grouping variables. Data compiled from the first-grade testing period were used to test the operational hypotheses. The major hypothesis was that pupils whose preferred modality was congruent with the primary instructional focus of the initial reading program (experimental group) would achieve higher on measures of reading vocabulary, comprehension, and general reading behavior at the end of first grade than pupils whose preferred modality was not congruent with the primary instructional focus of the

initial reading program (experimental group) would achieve higher on measures of reading vocabulary, comprehension, and general reading behavior at the end of first grade than pupils whose preferred modality was not congruent with the primary instructional focus of the initial reading program (control group). The minor hypothesis was that pupils of teachers identified as superior would achieve higher on measures of reading vocabulary, comprehension and general reading behavior than pupils of teachers rated as average or poor. These hypotheses were tested through one-way and two-way analyses of covariance. The covariates were intelligence as measured by the PPVT and sex membership.

This study utilized the aptitude treatment interaction (ATI) model when modality preference was the basis of aptitude classification. Similar to other ATI models, the two major problems were discreteness of learner classification and homogeneity of treatments. To verify the clinical identification of learners as auditory preferred, visual preferred and learners with no sensory modality preferences, discriminant analysis was employed. Classification variables were analyzed by stepwise multiple regression techniques in an effort to make the kindergarten assessment battery more efficient for future use.

Summary of Findings

1. The experimental group (congruent placement) achieved significantly higher than the control group (non-congruent placement) on measures of reading vocabulary, comprehension and general reading behavior. The differences were significant at the .001 level on measures of vocabulary and general reading behavior; on measures of reading

comprehension, the significance level was .01.

2. The results of eight two-way analyses of covariance comparing modality preference and experimental/control groups were:

   a. Differences in reading achievement outcomes for modality preference groups on measures of reading vocabulary, comprehension and general reading behavior were not significant when measured by the Woodcock Reading Mastery Test (WRMT). Differences, significant at the .05 level, were found when the criterion measure was the Gates MacGinitie Reading Test, Primary A (GMA). Visual preferred pupils achieved higher than auditory preferred or pupils with no sensory modality preference.

   b. Differences in reading achievement outcomes between the experimental and the control groups were significant at the .001 level when measured by Word Identification (WI), Passage Comprehension (PC), and Total Reading (TR) of WRMT. Differences in reading achievement outcomes for the experimental and control groups were significant at the .01 level when GMA was the criterion measure. Differences in reading achievement outcomes for the experimental and control groups were significant at the .05 level when Word Comprehension (WC) of the WRMT was the criterion.

   c. The interaction between modality preference and experimental/control placement was significant at the .05 level when Comprehension (C) of GMA was the criterion. There were no significant interactions between the two effects on the other criterion variables.

d. Differences between the adjusted means of modality preference and experimental/control groups on measures of reading vocabulary, comprehension and general reading behavior were significant at the .001 level on all the criteria.

3. The results of eight two-way analyses of covariance comparing experimental/control and teacher-competence groups were:

a. Differences between the experimental and control groups were significant at the .001 level when the criterion variables were WI, PC, and TR of WRMT. They were significant at the .01 level when the criterion variables were V, C, and CR of GMA and WC of WRMT. The difference was significant at the .05 level when WA of WRMT was the criterion.

b. Differences between teacher competence groups were significant at the .001 level when measured by WI, PC and TR of WRMT and V, C, and CR of GMA. The difference was significant at the .01 level when WC of WRMT was the criterion and at the .05 level when WA of WRMT was the criterion. Pupils of superior teachers achieved higher than pupils of average or poor teachers.

c. There was no significant interaction between the two main effects when WI, WA, WC, PC and TR of WRMT and V and CR of GMA were the criterion variables. There was interaction significant at the .05 level when C of GMA was the criterion.

d. Differences between the adjusted means of experimental/control and teacher competence groups were significant at the .001 level on all measures of reading vocabulary, comprehension and general reading behavior.

4. Discriminant analysis verified 92 percent of the cases identified by clinical decision procedures as auditory preferred, visual preferred and pupils with no sensory modality preference.
5. Stepwise multiple regression analysis of the classification variables with each of the criterion variables resulted in the identification of eleven variables as most predictive of reading achievement at the end of first grade: Word Recognition of GMRT, Sex Membership, Teacher Competence, Following Directions of GMRT, Letter Recognition Lower Case of the Informal Inventory of Letters and Numbers (ILN), Number Recognition of ILN, Numbers Reversed of ILN, Attitude Survey, Letters Reversed of ILN, Goodenough Draw-a-Man, and Experimental/Control Placement. The multiple correlation coefficients of the classification variables with each of the criterion variables ranged from .765 to .888.

Discussion and Conclusions

From the summary of the results of the analyses of covariance, it is clear that the experimental group achieved significantly higher than the control group on measures of reading vocabulary, comprehension and general reading behavior. This indicates that pupils whose modality preferences were congruent with the primary instructional focus of initial reading programs achieved significantly higher on all measures of reading behavior than pupils whose modality preferences were not congruent with the primary instructional focus of the initial program. Therefore, the major operational hypothesis was supported. The two-way analyses of covariance which compared modality preference and

experimental/control groups supported the findings of the one-way analyses with respect to experimental/control placement. The findings relevant to modality preference groups were mixed. Differences in reading achievement outcomes between modality preference groups were not significant when measured by the WRMT which was individually administered; however, when measured by the GMA which was administered in a group setting, the differences were significant at the .05 level. Visual preferred learners achieved higher than auditory preferred or learners with no sensory modality preference. It seems likely that the WRMT was more sensitive than the GMA because it was individually administered and there was less opportunity for random guessing. Another factor which may have contributed to the difference in reading achievement outcomes was teacher competence. Since the teachers identified as superior used a primarily visual program, their competence may have contributed to the superiority of visual preferred learners. It is suggested the differences in reading achievement outcomes between modality preference groups reflected on the GMA are due to one of three factors: the effects of superior teachers on visual preferred learners; the ability of visual preferred learners to utilize picture and context cues more efficiently since these skills are crucial on the GMA; or the reduced sensitivity of a group-administered test which allows more random responses.

Comparison of the differences in reading achievement outcomes of the modality preference groups when they had experimental or control placement showed some notable differences. Visual and auditory preferred learners had large differences in reading achievement outcomes when they had experimental or control placement. Those visual or auditory

preferred pupils whose modality preferences were congruent with the primary instructional focus of the initial reading program achieved significantly higher than those visual or auditory preferred pupils whose modality preferences were not congruent with the primary instructional focus of the initial reading program. When reading achievement outcomes for learners with no sensory modality preference were examined, relatively small differences were found between the experimental and control groups. Experimental placement was much more important for the auditory or visual preferred learners than it was for learners with no sensory modality preference. For those pupils who had auditory or visual preferences, congruent placement was a critical factor in determining reading achievement outcomes at the end of first grade.

The two-way analyses of covariance which compared experimental/control and teacher competence groups supported the findings of the other analyses with respect to the experimental/control placement. Pupils with experimental placement achieved significantly higher on measures of reading vocabulary, comprehension, and general reading behavior than pupils with control placement. Differences in reading achievement outcomes between teacher competence groups were significant on all measures of reading behavior. Pupils of teachers identified as superior achieved higher than pupils of teachers identified as average or poor. While this classification of teacher competence identified superior teachers, it was not successful in discriminating between average and poor teachers. Differences in achievement outcomes for pupils of teachers identified as average or poor were minimal. On most criterion measures, the pupils of the teacher identified as poor scored slightly higher than pupils

of teachers identified as average. There was no significant interaction between the two main effects on any criterion variable except C of GMA. The interaction of the two main effects, experimental/control placement and teacher competence, was significant at the .05 level when comprehension, as measured by the GMA, was the criterion.

This indicates that the experimental placement was more effective with superior teachers than it was with the poor teacher. When the pupils' preferred modality was congruent with the primary instructional focus of the initial reading program and teachers were superior, reading achievement outcomes at the end of first grade were highest.

Discriminant analysis was used to evaluate the clinical identification of learners as auditory preferred, visual preferred and learners with no sensory modality preferences. It was important to verify statistically the clinical identification of types of learners because discreteness of learner classification is one of the major problems associated with the aptitude treatment interaction model (Tobias, 1976). Previous studies which investigated the relationship between modality preferences and reading achievement have not verified their clinical identification of modality preference groups with statistical analyses (Robinson, 1972; Bateman, 1968; Bruininks, 1969). Their findings, which were not supportive of the modality concept, may be questioned on the basis of discreteness of learner classification. In her 1968 study, Bateman identified half of the pupils to whom she administered the Illinois Test of Psycholinguistic Abilities (ITPA) as auditory preferred and the other half as visual preferred. It seems improbable that 50 percent of incoming first graders would be auditory preferred and 50

percent would be visual preferred, but this was assumed in the assignments of subjects to auditory and visual learning groups. In the present study, approximately 50 percent of the subjects were auditory or visual preferred learners, while 50 percent had no sensory modality preference.

Discriminant analysis is a statistical procedure employed to determine the most effective classification of an individual into one of several groups. The researcher identifies the groups--in this case, auditory preferred, visual preferred and learners with no sensory modality preferences--and a set of classification variable are weighted and combined linearly so that discrimination between groups is maximized and heterogeneity within groups is minimized. Using this statistical procedure, 92 percent of the cases identified by clinical decision procedures were verified. In the two-year pilot study which preceded this investigation, approximately 98 percent of the clinical identifications of learners were verified. These findings appear to indicate that the modality preference groups identified through clinical decision procedures are distinct and can be verified through statistical analysis.

The stepwise multiple regression analyses of the classification variables with each of the criterion variables resulted in the identification of eleven classification variables as most predictive of reading achievement at the end of first grade. The multiple correlation coefficients ranged from .765 to .888. General reading behavior as measured by Total Reading of WRMT and Composite Reading of GMA had the highest multiple correlation coefficients while WC and WA of WRMT had the lowest coefficients.

The results of discriminant and regression analysis seem to suggest that a kindergarten battery which contained the following instruments would have discriminant validity with respect to the identification of modality preference groups and predictive validity with respect to reading achievement outcomes at the end of first grade: Gates MacGinitie Readiness Skills Test, Informal Inventory of Letters and Numbers; Illinois Test of Psycholinguistic Abilities, Selected Subtests of Auditory Sequential Memory and Visual Sequential Memory; and the Good-enough Draw-a-Man Test. Other classification variables which should receive consideration are sex membership, teacher competence, pupil attitude toward reading, and congruence between preferred modality and the primary instructional focus of the initial reading program.

Limitations of the Study

The sample of this study came from one public elementary school in Hawaii which is located in an economically disadvantaged, multi-ethnic, multi-lingual and multi-cultural community. Caution is recommended in generalizing these results to other school communities and to other socioeconomic levels.

Because this study was conducted in a public elementary school during a regular academic year, it was not possible to select teachers of equal competence for all four classrooms. The regular first-grade teachers who were assigned to this school participated in the study. In an attempt to minimize the effect of teacher competence on experimental/control placement, each classroom had pupils with experimental and control placement. This design permitted the contrast between

pupils with congruent placement and those with non-congruent placement within each classroom rather than between classrooms, thereby minimizing the possible influence of teacher competence on experimental/control placement. It is important to note that neither the classroom teachers nor the graduate students who administered the reading achievement tests at the end of first grade were aware of which pupils had experimental or control placement.

Since teacher competence was considered an important variable in determining the reading achievement outcomes at the end of first grade, the overall learning environment of each classroom was evaluated by the investigator. This evaluation was subjective and based on one individual's observations of the four classrooms each month over the entire academic year. It would have been preferable to have a team of evaluators rate the overall learning environment in each classroom, but this was not possible. Resource people within the school were invited to participate in the evaluation, but they declined for a variety of reasons.

It was impossible to isolate the effects of classroom organization and instructional program. The Hawaii English Program was carried out in an open classroom with three teachers for two classes; the Structural Reading Program and Reading 360 operated in self-contained settings with single teachers.

Although the kindergarten assessment battery provided a great deal of information about the children, there is one important area which was not evaluated--social-emotional development. An informal teacher observation checklist to evaluate social-emotional development would

be a desired addition to the kindergarten assessment battery.

Conclusions

Analyses of the findings of the study led to the following conclusions:

1. Pupils whose preferred modalities were congruent with the primary instructional focus of the initial reading program achieved significantly higher on measures of reading vocabulary, comprehension, and general reading behavior at the end of first grade than pupils whose preferred modalities were not congruent with the primary instructional focus of the initial reading program.
2. Pupils of teachers identified as superior achieved significantly higher on measures of reading vocabulary, comprehension and general reading behavior at the end of first grade than pupils of teachers identified as average or poor.
3. The clinical decision procedures used to identify the three types of learners as auditory preferred, visual preferred and learners with no sensory modality preferences were validated statistically.
4. The following kindergarten assessment instruments were identified as having high discriminant validity with respect to modality preference classification: Illinois Test of Psycholinguistic Abilities, selected subtests--Auditory Sequential Memory and Visual Sequential Memory; Gates MacGinitie Readiness Skills Test; and the Informal Inventory of Letters and Numbers.
5. The following kindergarten assessment instruments were identified as having high predictive validity with respect to reading achievement

at the end of first grade: Gates MacGinitie Readiness Skills Test; Informal Inventory of Letters and Numbers; and the Goodenough Draw-a-Man Test.

6. Findings of discriminant analysis and multiple regression suggest that the following battery would have discriminant and predictive validity as well as being more economical in terms of money and administration time: Gates MacGinitie Readiness Skills Test; Informal Inventory of Letters and Numbers; Goodenough Draw-a-Man Test; and Illinois Test of Psycholinguistic Abilities, selected subtests--Auditory Sequential Memory and Visual Sequential Memory.
7. Additional classification variables identified as predictive of reading achievement at the end of first grade were sex membership, teacher competence, pupil attitude towards reading, and congruence between the pupil's preferred modality and the primary instructional focus of the initial reading program.

Educational Implications

The findings of this study suggest that predetermined modality preference is an important consideration in early reading achievement. This finding is consistent with the results of Wepman and Morency (1971) and Daniel and Tacker (1974). The findings further suggest that for those pupils who are visual or auditory preferred, placement in an instructional program which is not congruent with their modality preference will result in significantly lower reading achievement outcomes at the end of first grade. It seems clear that the only way to be certain that each pupil will be placed in an initial reading

program which is congruent with his or her modality preference is to administer a kindergarten assessment battery which has discriminant and predictive validity prior to initial reading instruction. Schools could provide different instructional programs for auditory preferred and visual preferred learners. Auditory preferred learners should be placed in an instructional program which emphasizes sound/symbol association and other phonic cues. Visual preferred learners should be placed in an instructional program which emphasizes visual discrimination, visual memory, and other visual cues. In this study, approximately 50 percent of the pupils were auditory or visual preferred while 50 percent had no sensory modality preferences. For pupils with no sensory modality preferences the selection of the initial reading program is not as critical. An eclectic program which teaches through both auditory and visual modes is recommended. These recommendations are not new. In 1972, Jansky and de Hirsch pointed out the importance of early assessment, while in 1963, Austin and Morrison recommended "that no single method of instruction in beginning reading be advocated but that a variety of approaches be utilized and that these be adjusted to the competencies and needs of individual children" (Austin & Morrison, 1963, p. 221). Perhaps the recommendations which result from this study will give education some specific procedures which may help to improve initial reading instruction. The following recommendations are suggested:

1. The administration of a kindergarten assessment battery prior to initial reading instruction. This study identifies a battery which may be modified to fit the specific needs of other school communities.

2. Selection of an initial reading program which is congruent with the pupil's modality preference as identified by a kindergarten assessment battery.
3. While the primary objective of the kindergarten assessment battery is to assure a match between the pupil's modality preference and the primary instructional focus of the initial reading program, the secondary objective is to recommend activities which can be used to help pupils overcome their weaknesses.
4. Since pupils of teachers identified as superior achieved significantly higher on measures of reading vocabulary, comprehension and general reading behavior than pupils of teachers identified as average or poor, school systems are urged to plan effective, well coordinated inservice programs in which teachers can be encouraged to develop their competencies in the teaching of reading and the other language arts.
5. Inasmuch as mediocre and poor teaching were associated with poor achievement, it is suggested that school systems seek to identify superior teachers of reading and language arts and endeavor to optimize their effectiveness.
6. Strengthened preservice programs similar to the model programs described by Morrison and Austin in The Torch Lighters Revisited (1977) are recommended as possible ways of developing more competent teachers of reading and language arts.

Pilot Study

While the major focus of this paper has been the experimental study, a brief discussion of the longitudinal pilot study which preceded it is warranted. This study was initiated in 1974 due to the concerns of the principal and teachers about the poor reading achievement scores of students on standardized tests. Approximately, 69 percent of the pupils were scoring below the twenty-fifth percentile on the STEP reading test. Subsequently, the state of Hawaii replaced the STEP test with the Stanford Achievement Test (SAT) which is administered to all fourth and sixth grade students in the public schools. At this school, the average reading achievement scores on the SAT prior to 1977 were in the first and second stanines.

The major objective of this study was to improve the reading curriculum by placing students in reading programs which were congruent with their modality preferences. In the spring of 1974, all kindergarten children were administered the diagnostic battery. These data were recorded on profile sheets and children were placed in initial reading programs which were consistent with their modality preferences. All pupils had congruent placement. This resulted in a gradual reorganization of the reading curriculum, one grade level at a time. The diagnostic battery and the instructional programs were essentially the same as those described in the experimental study.

To evaluate the effectiveness of these curricular modifications, the appropriate forms of the Gates MacGinitie Silent Reading Tests were administered each May. Analysis of first, second, and third-grade

test scores indicate that between 27-30 percent of the pupils scored below the twenty-fifth percentiles. The first kindergarten class in this study is now in fourth grade. In October of 1977, they took the SAT as part of the statewide testing program. Their average reading scores were in the third and fourth stanines. These results are encouraging. It seems safe to say that at least in this school, consideration of the pupil's modality preference prior to initial reading instruction is making a difference in later reading achievement.

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